JAPAN QUALITY ASSURANCE ORGANIZATION
KITA-KANSAI TESTING CENTER
7-7, Ishimaru 1-Chome, Minoh-shi, Osaka 562 Japan. Phone. +81-727-29-2243/Facsimile. +81-727-28-6848

EMC EMISSION - TEST REPORT

JQA APPLICATION No. : KL8080484

Model/Type No. : R-310CK

Name of Product : Microwave Oven

FCC ID : APYDMR0120

Applicant : Sharp Corporation, Reliability Control Group

Address : 22-22, Nagaike-cho, Abeno-ku, Osaka, 545-8522, Japan

Manufacturer : Sharp Appliances (Thailand) Ltd.

Address : 64 Moo 5, Tambol Bangsamuk, Amphur Bangpakong, Chachoengsao, Province, Thailand

Final Judgement : **Passed**

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to Electro-technical Lab. of MITI Japan and Comminications Research Lab. of PTT Japan.

THE TEST RESULTS only responds to the test sample. This test report shall not be reproduced except in full.

JAPAN QUALITY ASSURANCE ORGANIZATION (JQA)
KITA-KANSAI TESTING CENTER
EMC DIVISION

LAB CODE: 200191-0

DIRECTORY

TEST REGULATION

FCC Rules and Regulations Part 18 Subpart A,B and C (September 5, 1985)
Classification FCC Rules Section 18.305(b)

● - Microwave Oven
○ - Industrial heaters and RF stabilized arc welder
○ - Medical diathermy
○ - Induction cooking ranges

● - ISM frequency
○ - Non-ISM frequency

Test procedure:

Radiated emission test was performed according to the procedures in FCC/OST MP-5 (1985).

GENERAL INFORMATION

Test facility:

1) Test Facility located at Kita-Kansai : 1st and 2nd Open Sites (3 m Site)
Test Facility located at Kameoka Open Site (3, 10 and 30 m, on common plane)
FCC filing No. : 31040/SIT 1300F2

2) KITA-KANSAI TESTING CENTER is recognized under the National Voluntary Lavoratory Accreditation Program for satisfactory compliance established in Title 15, Part 285 Code of Federal Regurations.
NAVLAP Lab Code: 200191-0

3) Average Measurement Method
FCC filing No. : 950523A 1300F2

Description of the Equipment Under Test (EUT):

1) Name : Microwave Oven
2) Model/Type No. : R-310CK
3) Product Type : Prototype
4) Category : ISM frequency Device
5) EUT Authorization : ○ - Verification ● - Certification ○ - D.o.C
6) Highest frequency used/generated : 2.45 GHz { Type 1: 2M226 / Type 2: 2M253H(L) }
7) Power Rating : 120V 60Hz

Definitions for symbols used in this test report:

● - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
○ - Blank box indicates that the listed condition, standard or equipment is not applicable for this Report.

TEST CONDITIONS

The measurement of the Radiated Emission (9 kHz - 30 MHz)
was performed in the frequency range of 9 kHz - 30 MHz,in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st site (3 meters)
○ - 2nd site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 3 meters
○ - 10 meters
○ - 30 meters

Validation of Site Attenuation:

1) Last Confirmed Date: November 21, 1997
2) Interval : 1 Year

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - ESH 3	A - 1		
○ - ESH 2	A - 2		
● - ESH 2	A - 3	December, 1997	1 Year
○ - HFH2-Z2	C - 2		
● - HFH2-Z2	C - 3	September, 1998	1 Year

Environmental conditions:

Type 1: Temperature: 23 °C Humidity: 45 %
Type 2: Temperature: 24 °C Humidity: 46 %

The measurement of the Radiated Emission (30 MHz - 1000 MHz)
was performed in horizontal and vertical polarization, in the frequency range of 30 MHz - 1000 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
○ - 1st site (3 meters)
○ - 2nd site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 3 meters
● - 10 meters
○ - 30 meters

Validation of Site Attenuation:

1) Last Confirmed Date: November 27, 1997
2) Interval : 1 Year

Used test instruments:

	Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○	ESV/ESV-Z3	A - 7 / A - 17		
○	ESV/ESV-Z3	A - 6 / A - 18		
○	ESV/ESV-Z3	A - 5 / A - 16		
●	ESV/ESV-Z3	A - 4 / A - 20	December, 1997	1 Year
○	ESV/ESV-Z3	A - 8 / A - 19		
○	KBA-511A	C - 12		
○	KBA-611	C - 22		
○	KBA-511A	C - 13		
○	KBA-611	C - 19		
●	KBA-511A	C - 11	November, 1997	1 Year
●	KBA-611	C - 21	November, 1997	1 Year
●	Cable	H - 2	November, 1997	1 Year

Environmental conditions:

Type 1: Temperature: 24 °C Humidity: 40 %
Type 2: Temperature: 19 °C Humidity: 50 %

The measurement of the Radiated Emission (1 GHz - 26 GHz)
was performed in horizontal and vertical polarization, in the frequency range of 1 GHz - 26 GHz, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st site (3 meters)
○ - 2nd site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 3 meters
○ - 10 meters

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - 8566B	A - 13	October, 1998	1 Year
○ - 8593A	A - 15		
● - ESV	A - 5	December, 1997	1 Year
● - WJ-6611-513	A - 23	May, 1998	1 Year
● - WJ-6882-824	A - 21	May, 1998	1 Year
● - DBL-0618N515	A - 33	October, 1998	1 Year
● - 91888-2	C - 41 - 1	May, 1998	1 Year
● - 91889-2	C - 41 - 2	May, 1998	1 Year
● - 94613-1	C - 41 - 3	May, 1998	1 Year
● - 91891-2	C - 41 - 4	May, 1998	1 Year
● - 94614-1	C - 41 - 5	May, 1998	1 Year
● - 3160-09	C - 48	October, 1998	1 Year
● - 4T-10	D - 73	May, 1998	1 Year
○ - 4T-10	D - 74		
● - MZ5010C	D - 81	October, 1998	1 Year
● - TRA-603D	D - 24	May, 1998	1 Year
○ - 8494H/8595H	D - 76		
● - Cable	C - 40 - 11	May, 1998	1 Year
● - Cable	C - 40 - 12	May, 1998	1 Year

Setting of the spectrum analyzer:

RES B.W : 3 MHz Video B.W : 3 MHz
SCALE : LINEAR Sweep Time: 20 msec

Environmental conditions:

Type 1: Temperature: 26 °C Humidity: 56 %
Type 2: Temperature: 24 °C Humidity: 46 %

The measurement of the ISM Frequency
was performed for line voltage variation from 80 % to 125 % of normal rated voltage, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
○ - 1st open test site
○ - 2nd open test site
● - Shielded room
○ - Anechoic chamber
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room
○ - Open test site

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - 8566B	A - 13	October, 1998	1 Year
○ - 8593A	A - 15		
● - 8673D	B - 2	April, 1998	1 Year
○ - WJ-6611-513	A - 23		
○ - WJ-6882-824	A - 21		
○ - DBL-0618N515	A - 33		
○ - 91888-2	C - 41 - 1		
● - 91889-2	C - 41 - 2	May, 1998	1 Year
○ - 94613-1	C - 41 - 3		
○ - 91891-2	C - 41 - 4		
○ - 94614-1	C - 41 - 5		
○ - 4T-10	D - 73		
○ - 4T-10	D - 74		
○ - 2-10	D - 40		
● - TR5212	B - 30	March, 1998	1 Year

Setting of the spectrum analyzer:

RES B.W : 30 kHz Video B.W : 30 kHz
SCALE : LOG 5dB/div Sweep Time: 300 msec

Environmental conditions:

Type 1: Temperature: 26 °C Humidity: 56 %
Type 2: Temperature: 24 °C Humidity: 46 %

The measurement of the RF Power Output
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
○ - Anechoic chamber
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments:

Model No.	Assigned C/N	Last Cal. Date	Cal. Interval
● - 2533-21	08011090	April, 1998	1 Year
● - 245506	Q47097361	April, 1998	1 Year
● - SIII-5000	Q47097350	February, 1998	1 Year

Environmental conditions:

Type 1: Temperature: 25 °C Humidity: 50 %
Type 2: Temperature: 23 °C Humidity: 47 %

CONFIGURATION OF EUT

The Equipment Under Test (EUT) consists of:

Description	Applicant (Manufacturer)	Model No. (Serial No.)	FCC ID
Microwave Oven	Sharp Corporation (Sharp Appliances (Thailand) Ltd.)	R-310CK (--)	APYDMR0120

The measurement was carried out with the following equipment connected:

Description	Grantee/Distributor	Model No. (Serial No.)	FCC ID
None			

Type of Interference Cable(s) and the AC Power Cord used with the EUT:

No.	Cable	Shielded	Ferrite Core	Length
1	AC Power Cord (EUT) with 3-pin plug	NO	NO	1.2m

Operation - mode of the EUT:

The EUT was operated during the measurement under following load condition:

1) Radiated Emissions Measurement (9 kHz - 30 MHz)
700ml of water, with the beaker located in the center of the removable turntable.

2) Radiated Emissions Measurement (30 MHz - 1000 MHz)
700ml of water, with the beaker located in the center of the removable turntable.

3) Radiated Emissions Measurement (1 GHz - 26 GHz)
General radiated emissions : 700ml of water, with the beaker located in the center of the removable turntable.
Second and third harmonics : Two loads, one of 700ml and the other of 300ml, of water are used. Each load is tested both with the beaker located in the center of the removable turntable and with it in the right front center.

4) ISM Frequency Measurement
1000ml of water in the beaker located in the center of the removable turntable.
Results of Type 1: 2410.00 MHz - 2462.20 MHz at 96 V (80 %)
2417.70 MHz - 2470.90 MHz at 120 V (100 %)
2430.00 MHz - 2471.10 MHz at 150 V (125 %)
Type 2: 2424.20 MHz - 2459.20 MHz at 96 V (80 %)
2415.70 MHz - 2459.60 MHz at 120 V (100 %)
2428.00 MHz - 2459.50 MHz at 150 V (125 %)

5) RF Power Output Measurement
1000ml of water in the beaker located in the center of the removable turntable.
Results of Type 1: 807.3 W
Type 2: 850.9 W

Test system:

The EUT is a microwave oven intended for the household use.
There is not any interface port on the EUT.
Either two types of magnetron is applied to the product (shown as following table).

Detailed the Magnetron:

Type 1: Cat. No. 2M226 (manufactured by LG Electronics Inc.)
Type 2: Cat. No. 2M253H(L) (manufactured by Toshiba Corporation)

The used (generated) frequencies in the EUT:

Magnetron (Type 1 and 2) : 2450 MHz
Micon : 4 MHz

EUT Modification

● - No modifications were conducted by JQA to achive compliance to the applied levels.

○ - To achieve compliance to the applied levels, the following change(s) were made by JQA during the compliance test.

The modification(s) will be implemented in all production models of this equipment.

Applicant : _____ Date :

Typed Name : Position :

Responsible Party

Responsible Party of Test Item(Product)

Responsibe party :

Contact Person :

_____
Signatory

TEST RESULTS

Radiated Emission (Magnetic Field) 9 kHz - 30 MHz

The requirements are ● - KEPT ○ - NOT KEPT

Min. limit margin
Type 1: More than +80.0 dB at 0.15 MHz
Type 2: More than +80.3 dB at 0.15 MHz

Max. limit exceeding _____ dB at _____ MHz

Uncertainty of measurement results + 2.5 dB(2σ) - 2.5 dB(2σ)

Remarks: The limits were determined by the RF power measurement (Refer to page 13).

Radiated Emission (Electric Field) 30 MHz - 1000 MHz

The requirements are ● - KEPT ○ - NOT KEPT

Min. limit margin
Type 1: +49.2 dB at 30.0 MHz
Type 2: +39.4 dB at 720.0 MHz

Max. limit exceeding _____ dB at _____ MHz

Uncertainty of measurement results + 3.8 dB(2σ) - 3.9 dB(2σ)

Remarks: The limits were determined by the RF power measurement (Refer to page 13).

Radiated Emission (Electric Field) 1 GHz - 26 GHz

The requirements are ● - KEPT ○ - NOT KEPT

Min. limit margin
Type 1: +15.7 dB at 14715.0 MHz
Type 2: + 7.6 dB at 14730.0 MHz

Max. limit exceeding _____ dB at _____ MHz

Uncertainty of measurement results + 3.1 dB(2σ) - 3.2 dB(2σ)

Remarks: The limits were determined by the RF power measurement (Refer to page 13).

TEST RESULTS

ISM Frequency 2.4 GHz - 2.5 GHz

The requirements are ● - KEPT ○ - NOT KEPT

Worst (lowest/highest) range against 2.45 GHz ± 50 MHz
Type 1: 2410.00 MHz - 2462.20 MHz at 96 V (80 %)
Type 2: 2415.70 MHz - 2459.60 MHz at 120 V (100 %)

Uncertainty of measurement results ±0.05 ppm

Remarks: _____

_____

RF Power Output

Measurement results (Calorimetric method)
Type 1 807.3 W
Type 2 850.9 W

Applied limits of Radiated Emission
Type 1: 31.8 dB(μV/m) at 300 m
10.0 dB(μV/m) at 1600 m
Type 2: 32.6 dB(μV/m) at 300 m
10.0 dB(μV/m) at 1600 m

Remarks: _____

_____

SUMMARY

GENERAL REMARKS :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 18 Subpart A, B and C (September 5, 1985) under the test configuration, as shown in page 15.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgement.

FINAL JUDGEMENT :

The "as received" sample;

● - fulfill the test requirements of the regulation mentioned on page 3.

○ - fulfill the test requirements of the regulation mentioned on page 3, but with certain qualifications.

○ - doesn't fulfill the test regulation mentioned on page 3.

Begin of testing : October 22, 1998

End of testing : November 17, 1998

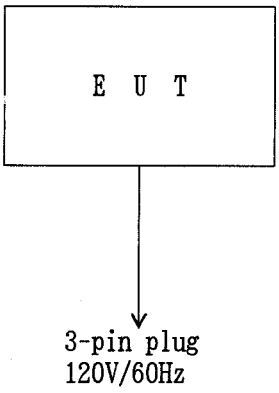
- JAPAN QUALITY ASSURANCE ORGANIZATION -

Takashi Yamanaka
Manager
EMC Div.
JQA KITA-KANSAI Testing Center

Approved Signatory :

Akio Hosoda
Project Manager
EMC Div.
JQA KITA-KANSAI Testing Center

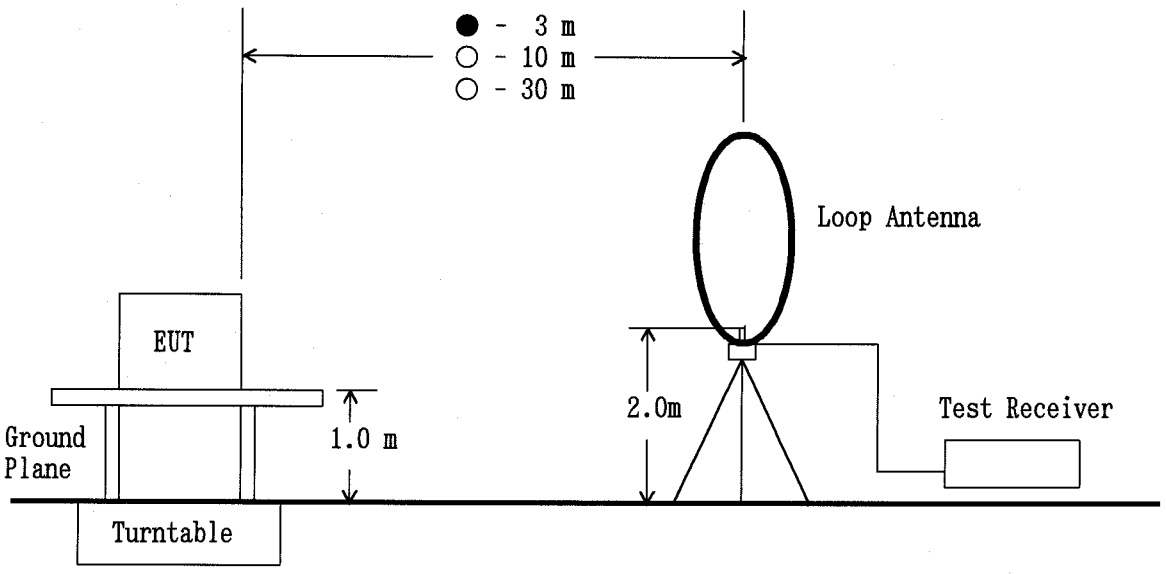
Test System-Arrangement (Drawings)



Preliminary Test and Test-setup(Drawings)

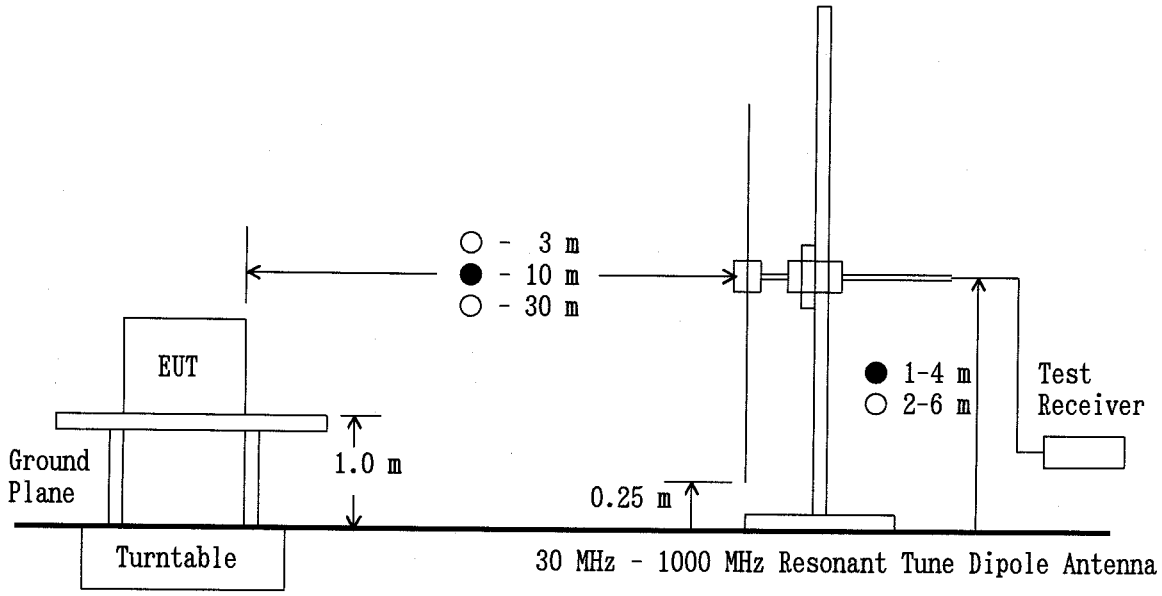
Radiated Emission (Magnetic Field) 9 kHz - 30 MHz:

The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: Using a test receiver and a test antenna probe, the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded every one of some divided bands in the specified frequency band (9 kHz - 30 MHz).
Step 3: Using a test receiver and a loop antenna, the emission's circumstance from the test system was measured at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the loop antenna. The maximum emission was found by changing the cable positions or cable manipulation under a typical system configuration.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



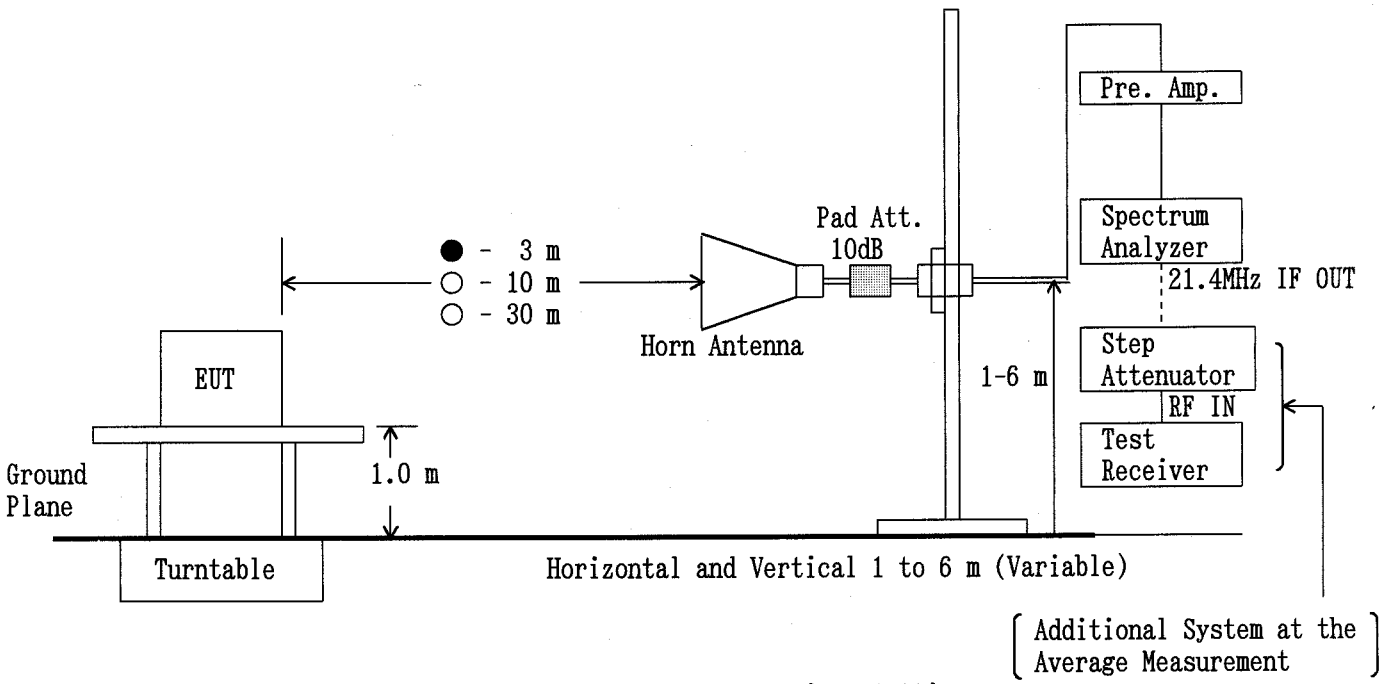
Radiated Emission (Electric Field) 30 MHz - 1000 MHz:

The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: Using a test receiver and a test antenna probe, the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded every one of 22 divided bands in the specified frequency band (30 MHz - 1000 MHz).
Step 3: Using a test receiver and a resonant tuned dipole antenna, the emission's circumstance from the test system was measured at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the resonant tuned dipole antenna. The maximum emission was found by changing the cable positions or cable manipulation under a typical system configuration.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



Radiated Emission (Electric Field) 1 GHz - 26 GHz:

The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: In order to investigate the frequencies of maximum emissions, the horn antenna position was approached to the EUT and the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded in the specified frequency band (1 GHz - 26 GHz).
Step 3: The emission's circumstance from the test system was measured at each frequency which was found higher emission referred to level vs. frequency on the list and which was measured in the specified distance using the horn antenna.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



Spectrum Analyzer Setting:

Detector	Peak	*)Average
RES BW	1 MHz	3 MHz
VIDEO BW	1 MHz	3 MHz
SPAN	0 Hz	0 Hz

Test Receiver Setting:

SCALE	LINEAR
I.F.B.W.	1 MHz
Detector	Average

*) For the average measurement, it is made using a test receiver and a step attenuator.

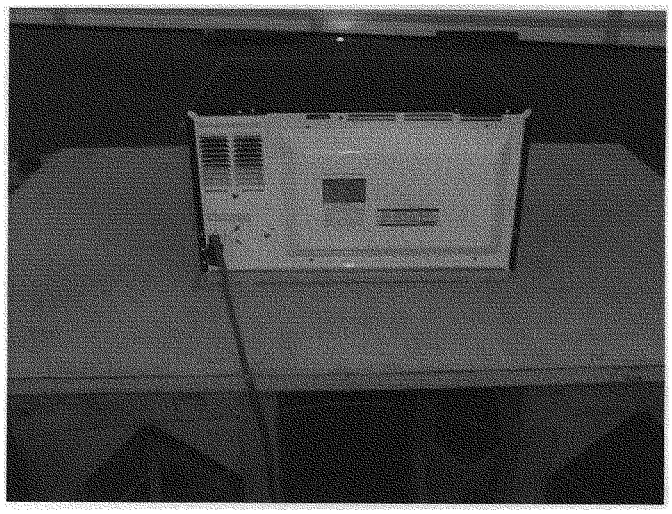
Test-Setup (Photographs) at worst case

Conducted Emission 10kHz - 30MHz:

Not Applicable

Radiated Emission 9kHz - 26GHz:

Front View



Rear View

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode,the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Type 1: 2M226 (LG Electronics Inc.)

Test Date: October 26, 1998
Temp.: 23 ℃ ; Humi.: 45 %

Frequency [MHz]	Corr. Factor [dB}	Meter Readings at 3m [dB(μV)]	Limits [μV/m] at 300m	Limits [μV/m] at 1600m	Results [μV/m] at 300m	Results [μV/m] at 1600m	Margin [dB]	Remarks (Note 2)
0.01	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	C
0.03	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	C
0.05	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	C
0.10	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	C
0.15	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
0.50	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
1.00	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
3.00	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
8.04	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
12.06	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
20.10	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D
30.00	0.0	< 30.0	31.8	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.0	D

Sample of calculated result at 0.15 MHz, as the Minimum Margin point:
Correction Factor = 0.0 dB
Conversion Factor = -80.0 dB(μV) (-40dB/decade)
+)Meter Reading = <30.0 dB(μV)
Result =<-50.0 dB(μV/m) at 300 m
Minimum Margin : $20\log(31.8/10^{<-50.0/20}) = 20\log\{31.8/(< 3.16\times10^{-3})\} = > 80.0$ (dB)
The point shown on "___ " is the Minimum Margin Point.

Note 1:
1)The highest frequency generated or used in the EUT: 2.45 GHz
2)The upper frequency of measurement range : 24.5 GHz
3)The limits at 300 m were conducted as the RF power 807.3 W : $25 \times \sqrt{807.3/500} = 31.8$ (μV/m)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	200 Hz
B	CISPR QP	9 kHz
C	Average	200 Hz
D	Average	10 kHz

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode,the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Type 2: 2M253H(L) (Toshiba Corporation)

Test Date: November 5, 1998
Temp.: 24 ℃ ; Humi.: 46 %

Frequency [MHz]	Corr. Factor [dB]	Meter Readings at 3m [dB(μV)]	Limits [μV/m] at 300m	Limits [μV/m] at 1600m	Results [μV/m] at 300m	Results [μV/m] at 1600m	Margin [dB]	Remarks (Note 2)
0.01	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	C
0.03	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	C
0.05	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	C
0.10	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	C
0.15	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
0.50	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
1.00	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
3.00	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
8.04	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
12.06	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
20.10	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D
30.00	0.0	< 30.0	32.6	10.0	$< 3.16\times10^{-3}$	$< 0.11\times10^{-3}$	>+80.3	D

Sample of calculated result at 0.15 MHz, as the Minimum Margin point:
Correction Factor = 0.0 dB
Conversion Factor = -80.0 dB(μV) (-40dB/decade)
+)Meter Reading = <30.0 dB(μV)
Result =<-50.0 dB(μV/m) at 300 m
Minimum Margin : $20\log(32.6/10^{<-50.0/20}) = 20\log\{32.6/(< 3.16\times10^{-3})\} = > 80.3$ (dB)
The point shown on "____ " is the Minimum Margin Point.

Note 1:
1)The highest frequency generated or used in the EUT: 2.45 GHz
2)The upper frequency of measurement range : 24.5 GHz
3)The limits at 300 m were conducted as the RF power 850.9 W : $25 \times \sqrt{850.9/500} = 32.6$ (μV/m)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	200 Hz
B	CISPR QP	9 kHz
C	Average	200 Hz
D	Average	10 kHz

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode,the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Test Date: October 22, 1998

Type 1: 2M226 (LG Electronics Inc.)

Temp.: 24 ℃ ; Humi.: 40 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Loss [dB]	Meter Readings at 10m dB(μV) Hori.	Vert.	Limits [μV/m] at 300m	at 1600m	Results (Highest) [μV/m] at 300m	at 1600m	Margin [dB]	Remarks (Note 2)
30.0	-0.6	0.6	< 5.0	10.0	31.8	10.0	0.11	0.02	+49.2	B
40.0	1.0	0.7	< 0.0	< 3.0	31.8	10.0	< 0.06	< 0.01	>+54.5	B
50.0	2.9	0.8	<-2.0	1.0	31.8	10.0	0.06	0.01	+54.5	B
60.0	4.5	0.8	<-2.0	<-4.0	31.8	10.0	< 0.05	< 0.01	>+56.1	B
90.0	8.0	1.1	<-8.0	<-8.0	31.8	10.0	< 0.04	< 0.01	>+58.0	B
240.0	16.5	1.9	<-8.0	<-8.0	31.8	10.0	< 0.11	< 0.02	>+49.2	B
720.0	26.8	3.7	<-14.0	<-14.0	31.8	10.0	< 0.22	< 0.04	>+43.2	B
760.0	27.3	3.9	<-14.0	<-14.0	31.8	10.0	< 0.24	< 0.05	>+42.4	B

Sample of calculated result at 30.0 MHz, as the Minimum Margin point:

Antenna Factor = -0.6 dB(1/m)
Cable Loss = 0.6 dB
Conversion Factor = -29.5 dB(μV) (-20dB/decade)
+)Meter Reading = 10.0 dB(μV)
Result = -19.5 dB(μV/m) at 300 m

Minimum Margin : $20\log(31.8/10^{-19.5/20}) = 20\log(31.8/0.11) = 49.2$ (dB)

The point shown on "____ " is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 2.45 GHz

2)The upper frequency of measurement range : 24.5 GHz

3)The limits at 300 m were conducted as the RF power 807.3 W : $25 \times \sqrt{807.3/500} = 31.8$ (μV/m)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Average	12 kHz
D	Average	7.5 kHz

Tester Signature : M. Urano

Type Name : Masaharu Urano

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode,the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Type 2: 2M253H(L) (Toshiba Corporation)

Test Date: November 6, 1998
Temp.: 19 ℃ ; Humi.: 50 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Loss [dB]	Meter Readings at 10m dB(μV) Hori.	Vert.	Limits [μV/m] at 300m	at 1600m	Results (Highest) [μV/m] at 300m	at 1600m	Margin [dB]	Remarks (Note 2)
30.0	-0.6	0.6	< 5.0	18.0	32.6	10.0	0.26	0.05	+42.0	B
40.0	1.0	0.7	< 5.0	18.0	32.6	10.0	0.32	0.06	+40.2	B
60.0	4.5	0.8	< 0.0	5.0	32.6	10.0	0.11	0.02	+49.4	B
75.0	6.4	1.0	0.0	4.0	32.6	10.0	0.12	0.02	+48.7	B
95.0	8.5	1.1	4.0	4.0	32.6	10.0	0.16	0.03	+46.2	B
120.0	10.5	1.3	<-7.0	<-7.0	32.6	10.0	< 0.06	< 0.01	>+54.7	B
300.0	18.4	2.1	<-8.0	<-8.0	32.6	10.0	< 0.14	< 0.03	>+47.3	B
616.0	25.3	3.4	<-6.0	<-6.0	32.6	10.0	< 0.45	< 0.09	>+37.2	B
720.0	26.8	3.7	-10.0	<-10.0	32.6	10.0	0.35	0.07	+39.4	B
910.0	29.0	4.3	<-13.0	<-13.0	32.6	10.0	< 0.35	< 0.06	>+39.4	B

Sample of calculated result at 720.0 MHz, as the Minimum Margin point:

Antenna Factor = 26.8 dB(1/m)
Cable Loss = 3.7 dB
Conversion Factor = -29.5 dB(μV) (-20dB/decade)
+)Meter Reading = -10.0 dB(μV)
Result = - 9.0 dB(μV/m) at 300 m

Minimum Margin : $20\log(32.6/10^{-9.0/20}) = 20\log(32.6/0.35) = 39.4$ (dB)

The point shown on "___ " is the Minimum Margin Point.

Note 1:
1)The highest frequency generated or used in the EUT: 2.45 GHz
2)The upper frequency of measurement range : 24.5 GHz
3)The limits at 300 m were conducted as the RF power 850.9 W : $25 \times \sqrt{850.9/500} = 32.6$ (μV/m)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Average	12 kHz
D	Average	7.5 kHz

Tester Signature : M. Urano

Type Name : Masaharu Urano

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode,the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Test Date: November 2, 1998

Type 1: 2M226 (LG Electronics Inc.)

Temp.: 26 ℃ ; Humi.: 56 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings at 3m dB(μV) Hori.	Vert.	Limits [μV/m] at 300m	at 1600m	Results (Highest) [μV/m] at 300m	at 1600m	Margin [dB]	Remarks (Note 2)
2398.5	21.6	-31.9	42.0	40.0	31.8	10.0	0.38	0.07	+38.0	C
2501.5	21.4	-31.9	40.0	40.0	31.8	10.0	0.30	0.06	+40.5	C
4908.0	36.4	-31.4	42.0	44.0	31.8	10.0	2.82	0.53	+21.1	C
7357.0	37.2	-29.6	44.0	< 41.0	31.8	10.0	3.80	0.71	+18.5	C
14715.0	46.2	-36.8	45.0	45.0	31.8	10.0	5.25	0.98	+15.7	C
17188.0	44.2	-37.2	43.0	44.0	31.8	10.0	3.55	0.67	+19.2	C
19600.0	40.3	-26.6	< 40.0	< 40.0	31.8	10.0	< 4.84	< 0.91	>+16.4	C
24500.0	40.4	-26.3	< 40.0	< 40.0	31.8	10.0	< 5.07	< 0.95	>+15.9	C

Corr. Factor (1GHz - 18GHz) = Cable Loss + 10dB Pad Attenuator - Amp. Gain (dB)
Corr. Factor (18GHz - 26GHz) = Cable Loss - Amp. Gain + Mixer Conversion Loss (dB)

Sample of calculated result at 14715.0 MHz, as the Minimum Margin point:
Antenna Factor = 46.2 dB(1/m)
Corr. Factor = -36.8 dB
Conversion Factor = -40.0 dB(μV) (-20dB/decade)
+)Meter Reading = 45.0 dB(μV)
Result = 14.4 dB(μV/m) at 300 m
Minimum Margin : $20\log(31.8/10^{14.4/20}) = 20\log(31.8/5.25) = 15.7$ (dB)
The point shown on "____ " is the Minimum Margin Point.

Note 1:
1)The highest frequency generated or used in the EUT : 2.45 GHz
2)The upper frequency of measurement range : 24.5 GHz
3)The limits at 300 m were conducted as the RF power 807.3 W : $25 \times \sqrt{807.3/500} = 31.8$ (μV/m)

Remarks:

Note 2	Detector Function	RES. B.W	V.B.W	Sweep T	Span
A	Peak (SP)	1 MHz	1 MHz	20 msec	0 Hz
B	Peak (SP)	100 kHz	100 kHz	20 msec	0 Hz
*) C	Average (ESV)	1 MHz (3 MHz)	3 MHz	20 msec	0 Hz

( ):Setting of spectrum analyzer
*)For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer(950523A)

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Electromagnetic Radiation Disturbance Measurement

ISM Frequency Device

Based on the test result of every test mode, the mode of operation that produce the Radiated emission that has the highest amplitude is shown as follows:

Test Date: November 5, 1998

Type 2: 2M253H(L) (Toshiba Corporation)

Temp.: 24 ℃ ; Humi.: 46 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings at 3m dB(μV) Hori.	Vert.	Limits [μV/m] at 300m	at 1600m	Results (Highest) [μV/m] at 300m	at 1600m	Margin [dB]	Remarks (Note 2)
2398.5	21.6	-31.9	72.9	72.9	32.6	10.0	13.49	2.53	+ 7.7	C
2501.5	21.4	-31.9	42.0	44.0	32.6	10.0	0.47	0.09	+36.3	C
4900.0	36.4	-31.4	44.0	44.0	32.6	10.0	2.82	0.53	+21.3	C
7300.0	37.0	-29.7	46.0	46.0	32.6	10.0	4.62	0.87	+17.0	C
14730.0	45.6	-36.9	54.0	49.0	32.6	10.0	13.65	2.56	+ 7.6	C
17200.0	44.2	-37.2	48.0	51.0	32.6	10.0	7.94	1.49	+12.3	C
19600.0	40.3	-26.6	< 40.0	< 40.0	32.6	10.0	< 4.84	< 0.91	>+16.6	C
24500.0	40.4	-26.3	< 40.0	< 40.0	32.6	10.0	< 5.07	< 0.95	>+16.1	C

Corr. Factor (1GHz - 18GHz) = Cable Loss + 10dB Pad Attenuator - Amp. Gain (dB)
Corr. Factor (18GHz - 26GHz) = Cable Loss - Amp. Gain + Mixer Conversion Loss (dB)

Sample of calculated result at 14730.0 MHz, as the Minimum Margin point:

Antenna Factor = 45.6 dB(1/m)
Corr. Factor = -36.9 dB
Conversion Factor = -40.0 dB(μV) (-20dB/decade)
+)Meter Reading = 54.0 dB(μV)
Result = 22.7 dB(μV/m) at 300 m

Minimum Margin : $20\log(32.6/10^{22.7/20}) = 20\log(32.6/13.65) = 7.6$ (dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:
1)The highest frequency generated or used in the EUT : 2.45 GHz
2)The upper frequency of measurement range : 24.5 GHz
3)The limits at 300 m were conducted as the RF power 850.9 W : $25 \times \sqrt{850.9/500} = 32.6$ (μV/m)

Remarks:

Note 2	Detector Function	RES. B.W	V.B.W	Sweep T	Span
A	Peak (SP)	1 MHz	1 MHz	20 msec	0 Hz
B	Peak (SP)	100 kHz	100 kHz	20 msec	0 Hz
*) C	Average (ESV)	1 MHz (3 MHz)	3 MHz	20 msec	0 Hz

( ):Setting of spectrum analyzer
*)For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer(950523A)

Tester Signature : A. Hosoda

Type Name : Akio Hosoda